SLOVENSKI STANDARD
SIST ETS 300 806-2 E1:2005

01-marec-2005

Zasebno omrežje z integriranimi storitvami (PISN) - Medcentralni signalizacijski protokol - Generiļ ni funkcijski protokol za podporo dopolnilnim storitvam - 2. del: Abstraktni preskuġalni niz (ATS) - Specifikacija

Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Generic functional protocol for the support of supplementary services; Part 2: Abstract Test Suite (ATS) specification

Ta slovenski standard je istoveten z: **ETS 300 806-2 Edition 1**

ICS:

33.040.35 Telefonska omrežja Telephone networks

SIST ETS 300 806-2 E1:2005 **en**

EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 806-2

February 1998

Source: ECMA

Reference: DE/ECMA-00110-2

ICS: 33.020

Key words: ATS, layer 3, PINX, PISN, QSIG, supplementary service, testing

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Foreword

This European Telecommunication Standard (ETS) has been produced by the standardizing Information and Communication Systems Association (ECMA) on behalf of its members and those of the European Telecommunications Standards Institute (ETSI).

This ETS comprises two parts with the generic title "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Generic Functional Protocol (GFP) for the support of supplementary services". The title of each part is listed below:

Part 1: "Test Suite Structure and Test Purposes (TSS & TP)";

Part 2: "Abstract Test Suite specification (ATS)".

Transposition dates	
Date of adoption of this ETS:	23 January 1998
Date of latest announcement of this ETS (doa):	31 May 1998
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 November 1998
Date of withdrawal of any conflicting National Standard (dow):	30 November 1998

1 Scope

This European Telecommunication Standard (ETS) contains the Abstract Test Suite (ATS) specification for the core part of the Generic Functional Protocol (GFP) for the support of supplementary services of the Inter-exchange signalling protocol, for Private Integrated Services Networks (PISN).

The core part of the GFP excludes the connectionless Application Packet Data Unit (APDU) transport mechanism, the Data Service Element (DSE) protocol, the Application Control Service Element (ACSE) protocol, procedures for carrying manufacturer specific information and requirements only relevant to Originating PINXs for calls and Call Independent Signalling Connections (CISCs) or source PINXs for APDUs and notifications.

The objective of this ETS is to provide conformance tests which give a high probability of inter-operability. This ETS covers the core part of the procedures described in ETS 300 239 [1].

The ISO standard for the methodology of conformance testing (ISO/IEC 9646-1 [5], ISO/IEC 9646-2 [6] and ISO/IEC 9646-3 [7] including Amendment 1 [8]) is used as basis for the test methodology.

This ETS is applicable to implementations which support either a Basic Rate (BR) or a Primary Rate Access (PRA) interface, or both, operating over a leased line. It is applicable to PINXs acting as both transit or end PINXs for calls and Call Related Signalling Connections (CRSC), however it does not include test cases applicable to end PINXs acting as source or originating PINXs.

Annex A provides the Partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma of this ETS.

Annex B provides the Protocol Conformance Test Report (PCTR) proforma of this ETS.

Annex C provides the Tree and Tabular Combined Notation (TTCN) part of this ETS.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited in the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments or revisions to any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ETS 300 239 (1995): "Private Integrated Services Network (PISN); Inter-exchange signalling protocol; Generic functional protocol for the support of supplementary services".

[2] ETS 300 172 (1995): "Private Integrated Services Network (PISN); Inter-exchange Signalling protocol; Circuit Mode Basic Services".

[3] ETS 300 806-1 (1996): "Private Integrated Services Networks (PISN); Inter-exchange signalling protocol; Generic Functional Protocol for the support of supplementary services; Test Suite Structure and Test Purposes (TSS&TP)".

[4] ETS 300 805-2 (1996): "Private Integrated Services Networks (PISN); Inter-exchange signalling protocol; Circuit Mode Basic Services; Network Layer (NL); Abstract Test Suite Specification (ATS)".

[5] ISO/IEC 9646-1 (1994): "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 1: General Concepts".

[6] ISO/IEC 9646-2 (1994): "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 2: Abstract Test Suite Specification".

[7] ISO/IEC 9646-3 (1992): "Information Technology - Opens Systems Interconnection - Conformance Testing Methodology and Framework - Part 3: The Tree and Tabular Combined Notation (TTCN)" including Amendment 1 to ISO/IEC 9646-3: 1992 TTCN extensions (1996).

[8] ISO/IEC 9646-3 AM2 (1997): "Amendment 1 to ISO/IEC 9646-3: 1992 Further extensions" .

[9] ISO/IEC 9646-4 (1994): "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 4: Test Realization".

[10] ISO/IEC 9646-5 (1994): "Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 5: Requirements on test laboratories and clients for the conformance assessment process".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

Abstract Test Suite (ATS): See ISO/IEC 9646-1 [5].

application layer: For the purposes of this ETS, this refers to the procedures described as such in ETS 300 239 [1], subclause 6.2.

Implementation Under Test (IUT): See ISO/IEC 9646-1 [5].

Lower Tester (LT): See ISO/IEC 9646-1 [5].

Network Layer: For the purposes of this ETS, this refers to the procedures described as such in ETS 300 239 [1] subclause 6.2.

originating PINX: See ETS 300 239 [1].

Point of Control and Observation (PCO): See ISO/IEC 9646-1 [5].

Protocol Implementation Conformance Statement (PICS): See ISO/IEC 9646-1 [5].

PICS proforma: See ISO/IEC 9646-1 [5].

Protocol Implementation Extra Information For Testing (PIXIT): See ISO/IEC 9646-1 [5].

PIXIT proforma: See ISO/IEC 9646-1 [5].

Signalling Carriage Mechanism (SCM): See ETS 300 172 [2].

super test purpose: See ETS 300 806-1 [3].

System Under Test (SUT): See ISO/IEC 9646-1 [5].

terminating PINX: See ETS 300 239 [1].

transit PINX: See ETS 300 239 [1].

Upper Tester (UT): See ISO/IEC 9646-1 [5].

3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

ACSE	Application Control Service Element
APDU	Application Packet Data Unit
ASP	Abstract Service Primitive
ATM	Abstract Test Method
ATS	Abstract Test Suite
CF	Co-ordination Function
CISC	Call Independent Signalling Connection
CM	Co-ordination Message
CP	Co-ordination Point
CTP	Combined Test Purpose
DSE	Data Service Element
ETS	Executable Test Suite
GFP	Generic Functional Protocol
GFTC	Generic Functional Transport Control
IUT	Implementation Under Test
LT	Lower Tester
MTC	Master Test Component
PC	Protocol Control
PCO	Point of Control and Observation
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
PINX	Private Integrated Services Network Exchange
PISN	Private Integrated Services Network
PIXIT	Protocol Implementation eXtra Information for Testing
PSS1	Private Integrated Signalling System No.1
PTC	Parallel Test Component
ROSE	Remote Operation Service Element
RTM	Response Test Method
SS	Switching System
SUT	System Under Test
TC	Test Case
TP	Test Purpose
TTCN	Tree and Tabular Combined Notation

4 Abstract Test Method (ATM)

This clause describes the different ATMs used for testing the GFP. Two methods are applied; the Remote test method, and the Multi-Party test method.

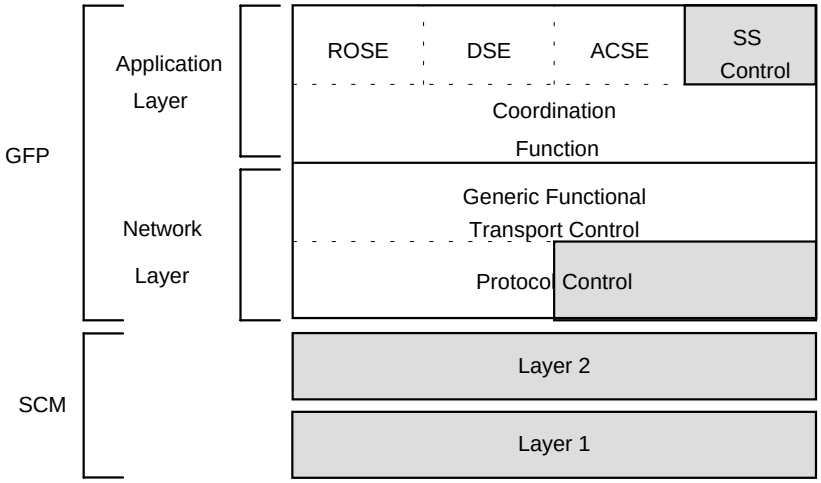
4.1 Choice of the ATM

4.1.1 Functional subsets

The GFP is divided into a number of entities as shown in figure 1. This ATS is principally concerned with the testing of the Protocol Control (PC) and Generic Functional Transport Control (GFTC) entities, however it also contains Test Cases (TCs) concerning some error handling functions of the Co-ordination and ROSE entities.

NOTE: Valid behaviour of the application layer is supplementary service specific and its testing is specified in test specifications for individual supplementary services (if any). DSE requirements are excluded from the scope of this ETS.

The testing of all these layers is performed using a PCO at the SCM/Network layer boundary.



NOTE: Grey shading indicates entities not part of the GFP.

Figure 1: GFP functional subsets

4.1.2 PINX Role and Test Component Configuration considerations

A PINX may act either in the role of an End PINX or in the role of a Transit PINX in the context of each Basic Call or CISC. A particular PINX may be capable of acting in one or both roles. Whereas the Generic Functional Transport Control (GFTC) requirements generally depend on which role is involved, the Protocol Control (PC) requirements do not.

Depending on the role of the PINX, it may be necessary to use different procedures in the preambles to achieve the pre-condition in some TPs concerned with PC requirements. For these cases, which will require different test component configurations, there may be two separate Test Cases (TCs), one for each role, generated from each relevant TP.

4.2 Single PCO testing

Single PCO testing applies to all aspects of the testing of the IUT as an End PINX. It is also used for those tests as a Transit PINX when events at the outgoing side are not required to be tested and when no activity is expected at the outgoing side, i.e. only one interface is reacting.

4.2.1 Testing of End PINX and Transit PINX (single Transit interface active)

As shown in figure 2, the ROSE, Co-ordination Function (CF), GFTC and Protocol Control (PC) part, is considered to be the IUT, and an end-system. It is not possible to observe and control the upper service boundary of the IUT. Consequently, the test method chosen is the Remote Test Method, where the co-ordination procedures are expressed in an informal way. The test system will only contain one LT and no UT. The PCO, called LX, is located between the ROSE, Co-ordination Function, Generic Functional Transport Control and Protocol Control part, and the segmentation part. Only unsegmented Protocol Data Units (PDUs) are exchanged.

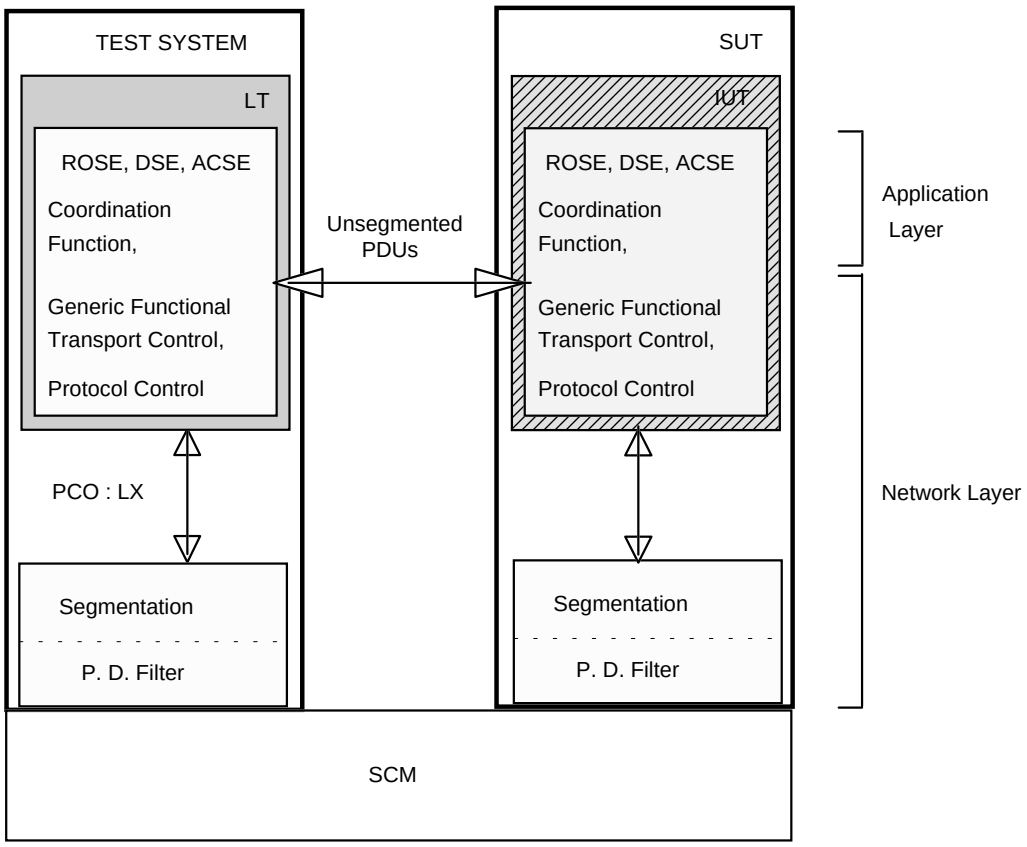


Figure 2: Remote single layer test method for testing of end PINX and transit PINX (single transit interface active)

4.3 Multiple PCO testing

Multiple PCO testing applies to the testing of the IUT as a transit PINX, except for tests were no events on the outgoing side are expected. The two interfaces are active.

4.3.1 Testing of transit PINX (dual transit interfaces active)

As shown in figure 3, the ROSE, CF, GFTC and PC part is considered to be the IUT, and is an open-relay system. Consequently, the test method chosen is a multi-party test method with no UT. The test system will contain two LTs attached to the IUT via two PCOs, called LX and LY, located between the ROSE, CF and PCl part, and the segmentation part. The PDUs exchanged are only unsegmented PDUs.